

CLAIMS

1. A process for producing a poly(methyl methacrylate)-metal cluster composite, which comprises bringing poly(methyl methacrylate) into contact with a heavy metal compound under ultraviolet irradiation.

2. A process for producing a poly(methyl methacrylate)-metal cluster composite, which comprises bringing a poly(methyl methacrylate) basal plate having an ultraviolet-irradiated portion into contact with vapor of a heavy metal compound to form heavy metal nanoparticles on the ultraviolet-irradiated portion.

3. The process for producing a poly(methyl methacrylate)-metal cluster composite according to claim 1 or 2, wherein the heavy metal compound is selected from acetylacetonate complexes of palladium, cobalt or copper.

4. The process for producing a poly(methyl methacrylate)-metal cluster composite according to claim 2, wherein the poly(methyl methacrylate) basal plate is brought into contact with vapor of the heavy metal compound in a non-oxidizing atmosphere.

5. The process for producing a poly(methyl methacrylate)-metal cluster composite according to claim 2, wherein the poly(methyl methacrylate) basal plate is brought into contact with vapor of the heavy metal compound at a temperature of glass transition temperature of the poly(methyl methacrylate) basal plate or higher.

6. The process for producing a poly(methyl methacrylate)-metal cluster composite according to any one of claims 2 to 5, wherein the ultraviolet-irradiated portion is formed in a predetermined pattern.

7. The process for producing a poly(methyl methacrylate)-metal cluster composite according to claim 6, wherein the predetermined pattern is formed by masking.

8. A patterning material which comprises a poly(methyl methacrylate)-metal cluster composite obtainable by the process according to any one of claims 1 to 7.

9. A method for patterning metal nanoparticles having a predetermined form on a poly(methyl methacrylate) basal plate, which comprises forming a masking portion having a predetermined form on the poly(methyl methacrylate) basal plate having an ultraviolet-irradiated portion, and then bringing the plate into contact with vapor of a heavy metal compound to form metal nanoparticles on a non-masking portion.